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SEISMIC ARRAY ANALYSIS CENTER

H. Mack

Teledyne Geotech

Prepared for:

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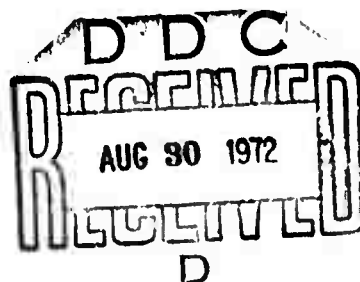
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SEISMIC ARRAY ANALYSIS CENTER QUARTERLY TECHNICAL SUMMARY REPORT APRIL - JUNE 1972



H. MACK

25 JULY 1972

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SEISMIC ARRAY ANALYSIS CENTER
QUARTERLY TECHNICAL SUMMARY REPORT
April - June 1972

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INTRODUCTION

This quarterly report summarizes the operations and accomplishments in the SAAC for the period of April, May and June 1972.

TASK A - OPERATE SAAC

Operation

The SAAC Detection Processor (DP) and Event Processor (EP) were normally run with constant parameter settings, 24 hours a day, seven days a week during this period.

Table I shows the DP uptime and downtime as well as the general problem categories causing the downtime. Hardware problems were mainly confined to the Special Purpose System (SPS) and IBM Federal Systems Division engineers were called in to try to rectify the problem. The SPS appears to be working more consistently.

Table II shows the EP and analyst time required to review and edit DP detections.

ARPA Net

On 26 May the TIP was received and installed by BBN. An ASR33 and a TI 725 teletype terminals were delivered and are now linked to the ARPA Net via the TIP. BBN indicated that the IMLAC PDS-1 graphics display unit will be delivered to the SAAC in late July.

<u>Month</u>	<u>April</u>	<u>May</u> (in hours)	<u>June</u>	<u>Total</u>
<u>Problems</u>				
Hardware	60.5	52.2	2.4	115.1
Software & Testing	8.9	4.8	0	13.7
Power Failure	2.6	1.3	8.3	12.2
50 KB Phone Line	11.9	6.6	16.1	34.6
Preventative Maint.	4	4.0	4.4	12.4
<hr/>				
Total DP Downtime	87.9	68.9	31.2	188
Total DP Uptime	632.1	675.1	688.8	1996.0
% Uptime	87.8	90.7	95.7	91.4%
Total Possible	720	744	720	2184
Recording Time				

Table I. DP ISRSPS Up-Downtime for LASA Data
in 2nd Quarter 1972

<u>Month</u>	April	May (in hours)	June	Total
DP Recording Time Covered by EP Analysis	620.8	661.7	686.4	1968.9
Analyst Time Required on EOC	137.0	202.1	99.5	438.6
IBM 360/40B Time Required on EP (estimate)	444	498.8	393.5	936.3

No. of Detections	13214	13537	13261	40012
No. of Events Listed in Summary	666	729	640	2035

Table II. DP-EP Analysis Time in 2nd Quarter 1972

Documentation and Programming

At 1829 on 19th May the modification to the DP and EP was completed to allow the continuous transmission of data from the SAAC to the Norwegian Data Processing Center associated with NORSAR. Data transmitted include LASA and ALPA LP data, the LASA/SAAC detection log and the SAAC EP output. The Norwegians have commented that quality of the received data is good.

Conversion of CDC 1604 programs used in the Seismic Data Laboratory continued throughout the quarter. Basic plotting and system utility routines were completed in late May. Twelve applications programs had also been converted as of June 30th for which the documentation is currently being written.

Data Requests

During the quarter 605 external users data requests were fulfilled, 522 for MIT Lincoln Lab and 83 for the SDL. 23 tapes had unrecoverable data leaving 341 outstanding requests on July 1st.

TASK B - EVALUATION

The EP threshold was lowered from the routine 14db on two separate occasions during the quarter. The main reason was to determine what threshold the system, including the analysts, could handle without consistently falling behind.

From 2110 on the 10th of April to 100 on the 14th April the threshold was set at 12db. Seismic activity was average and the system was able to keep up but required all available time on the 360/40B.

From 1720 on May 22nd to 1400 on 26 May the threshold was lowered to 10db. During the latter experiment, after the first 24 hours the pointer was reset so the same data were reprocessed

using beam packing only. The system developed a large backlog but managed to catch up after the EP threshold was reset to 14db.

Until a method of detecting and accounting for local events is developed, the tests indicate that an EP threshold of about 12db is the minimum the system can handle without falling behind.

TASK C - LASA/NORSAR COMPARISON

The detection logs and event summaries of the LASA/SAAC and NORSAR, covering a 40 day period, have been compared between themselves and with the NOAA bulletin. 73% of the events reported by NOAA were also reported by the LASA-NORSAR combination, NORSAR reporting a smaller percentage of NOAA listed events in its area of coverage than did LASA.

TASK D - LP NETWORK EVALUATION

Because of the heavy load on the IBM 360/44 the attempt to run LP analysis in real time was abandoned and events are now processed on a selective basis.

The FKCOMB program was extended to include TFSO data and a study was initiated to compare Raleigh wave detection capabilities of TFSO and LASA the results of which are as yet inconclusive.

SAAC REPORTS

SAAC reports No. 5 and SAAC report No. 6 were approved for released and distributed during the quarter. SAAC report No. 7 was completed and submitted for clearance. All three reports covered work completed under Project Number VT1709.

Report No. 5 is an evaluation of the SAAC automated data acquisition and processing systems based on operations from February 1, 1971 to December 31, 1971. Discrete recurrence curves indicated the LASA/SAAC system as operated to have a 90% detection threshold at $M_b = 3.8$.

Report No. 6 is a preliminary evaluation of the detection capability of the large array network. The results indicate that large earthquakes make Rayleigh wave detection impossible for about 5% of the time.